



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,427	01/02/2002	Guenther Heinz	B01-085A	7207
26683	7590	04/19/2006	EXAMINER	
THE GATES CORPORATION IP LAW DEPT. 10-A3 1551 WEWATTA STREET DENVER, CO 80202			KRUER, STEFAN	
			ART UNIT	PAPER NUMBER
			3654	

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/037,427	Applicant(s) HEINZ ET AL.	
	Examiner Stefan Kruer	Art Unit 3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31, 33 - 42 is/are pending in the application.
 4a) Of the above claim(s) 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 -26, 28-31, 33-42 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06 Mar. 2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Claim 27 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3 May 2004.

Applicant is requested to change the status identifier of the claim as provided in parentheses from "Original" to "Withdrawn", as set forth in 37 CFR 1.121(c). Furthermore, applicant is advised that in accordance with 37 CFR 1.121(c)(4)(i), a claim that has been cancelled by the applicant, e.g. **Claim 32**, should *only* include the proper status identifier. The claim text is superfluous. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 and 4 – 7, 13 – 14, 16, 17, 19, 28, 31, 33, 34, 39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al (WO 99/43598) in view of Aulanko et al (WO 98/29326) and White et al (US 4,981,462).

Re: Claims 1, 13, 28, 31, 39 and 42, Adifon et al disclose an elastomeric body (Fig. 7) having a width *w* and a thickness *t* and having a pulley-engaging surface, the elastomeric body having an aspect ratio greater than one and a tensile cord (726) contained within the elastomeric body and extending longitudinally. However, Adifon et al disclose their pulley-engaging surface and corresponding pulley as having flat profiles.

Aulanko et al teach that their "...hoisting rope ... may be ... a V-shaped cross-section... to achieve a very large friction between the hoisting rope and the corresponding keyway on the traction sheave" (Page, 10, Line 11). White et al further teach a ribbed belt (Fig. 3) having a plurality of ribs, said ribs having a 60° angle as preferable to a 40° rib, for reducing tension decay while ensuring drive alignment and reduction in noise, (Col. 5, Line 64), for engagement with the corresponding ribbed surface of his pulley (40).

It would have been obvious to one of ordinary skill in the art to modify the invention of Adifon et al with the teaching of Aulanko et al as furthered by White et al to provide a ribbed pulley-engaging surface, with a rib of approximately 90°, to gain the benefits of reduced torque requirements, thereby savings in space and costs, as well as improvements in rider comfort and operational efficiencies.

Re: Claims 2, 14 and 29, Adifon et al disclose a tensile cord (726) comprising a conductive material having a resistance, as inherent to fibers of "...high-carbon steel..." (Pg 7, Line 15).

Re: Claims 4 and 16, White et al teach a plurality of ribs.

Re: Claims 5 and 17, Adifon et al disclose a lift belt (16, Fig. 1) having an end.

Re: Claim 6, Adifon et al disclose a plurality of tensile cords (726).

Re: Claims 7 and 19, White et al teach a jacket (30) on a surface opposite the pulley-engaging surface.

Re: Claim 6, Adifon et al disclose a plurality of tensile cords (726).

Re: Claims 33, 34 and 40, Aulanko et al teach fiber loading in the elastomeric body (Pg 10, Line 17).

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al over Aulanko et al and White et al, as applied to Claim 40, and in further view of Stork (US 4,330,287).

Whereas Adifon et al and White et al are silent regarding the fiber loading of their elastomeric bodies, Aulanko et al make general reference to the use of synthetic fibers. Stork, however, teaches, "...rubberized woven fabric material such as cotton, polyester or nylon or combinations thereof..." (Col. 3, Line 58) that forms his "partial tension section" as a "flexible resilient material".

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a matrix of fibers for the benefit of flexural resilience.

Claims 3, 15, 18, 21 – 22, 26 and 30, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Aulanko et al and White et al, as applied to Claims 2 and 14 and 28, and in further view of Suhling (DE 3,934,654) and Siefert (US 3,662,596).

Re: Claims 3, 15 and 30, though Adifon et al disclose a tensile cord comprising a conductive material having a resistance, and the resistance of the cord inherently varies through changes in loading, their tensile cord as such is not configured for indicating change in resistance. Furthermore, neither Aulanko et al nor White et al teach tension cords of conductive material. Suhling, however, while teaching the incorporation of conductive tensile cords (12a – 12h, Fig. 2) in conventional flat- and toothed suspension belts (11) for the detection of breakage, whereby the integrity of the suspension belt is monitored for replacement, does not indicate a lifting load.

Siefert teaches his apparatus for the measurement of "...tension or compression stresses in a metal tire cord embedded in rubberized material of a tire..." as a means to determine the tensile/compressive strains of "...reinforcing metal cords... under different inflation, loading and operating conditions. (Col. 1, line 13).

It would have been obvious to one of ordinary skill in the art to modify the invention Adifon et al, Aulanko et al and White et al with the teachings of Suhling and Siefert to provide a means to determine the lifting load of suspension belts by monitoring the tension cords for elongation in advance of failure, for purposes of maintenance, safety and optimization.

Re: Claim 18, Adifon et al disclose a plurality of tensile cords (726).

Re: Claims 21 and 22, Adifon et al disclose their cords (726) "...formed from ... a metallic material, such as thin, high-carbon steel..." (Pg 7, Line 15).

Re: Claim 26, Adifon et al disclose an elastomeric body having a width w and a thickness t and having a pulley-engaging surface, the elastomeric body having an aspect ratio greater than one and a tensile cord (726) contained within the elastomeric body and extending longitudinally. However, Adifon et al disclose their pulley-engaging surface and corresponding pulley as having flat profiles.

Aulanko et al teach their hoisting rope having a V-shaped profile to improve traction (Page, 10, Line 11), however his traction sheave is limited to a single "keyway". White et al further teach a ribbed belt (Fig. 3) having a plurality of ribs, said ribs having a 60° angle as preferable to a 40° rib, for reducing tension decay while ensuring drive alignment and reduction in noise, (Col. 5, Line 64), for engagement with the corresponding ribbed surface of his pulley (40).

Neither Adifon et al, Aulanko et al nor White et al, however, disclose an electric circuit for detecting a tensile core load and controlling operation of the system.

Suhling, however, teaches an electric circuit for detecting a tensile cord failure and an interface to provide an alarm signal (audible or visual) and/or to automatically shutdown a hoist motor (Col. 4, line 38). Siefert teaches further his apparatus for measuring of the stress of reinforcing cords and his electrical circuit for indicating the stress under various operating conditions.

It would have been obvious to one of ordinary skill in the art to modify the invention Adifon et al, Aulanko et al and White et al with the teachings of Suhling and Siefert to reduce the required drive capacity, as well as noise, thereby offering savings in costs and space, as well as improved rider comfort, in addition to the incorporation of reinforcement elements, the latter further having an interface with a load detection means, for purposes of maintenance, safety and system optimization.

Re: Claim 35, Aulanko et al teach fiber loading in the elastomeric body (Pg 10, Line 17).

Claims 8 – 10, 20, 25 and 36 - 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al over Aulanko et al and White et al, as applied to Claims 7, 19 and 33, and in further view of Stork.

Re: Claims 8 and 20, whereas White et al discloses his jacket, he is silent with regard to its material of construction other than his statement as to such material being well known in the art (Col. 4, Line 20).

Stork, however, teaches his jacket (17,18, Fig. 2 and Col. 3, line 57) comprising "...rubberized woven fabric material such as ... nylon..."

In that nylon is known to the art as an abrasion resistant material, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the jacket of nylon for resistance to wear.

Re: Claims 9 and 10, Adifon et al disclose their cords (726) "...formed from ... a metallic material, such as thin, high-carbon steel..." (Pg 7, Line 15).

Re: Claim 25, whereas Adifon et al, Aulanko et al and White et al are silent regarding fibers extending from their pulley-engaging surfaces, Stork teaches his "...ribs ... preferably composed of a fiber-loaded elastomeric compound..." having "...one or more fabric reinforcement layers for crack resistance..." (Col. 4, Line 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to extend fibers from the pulley-engaging surface to improve resistance to wear and failure.

Re: Claims 36 - 38, whereas Adifon et al and White et al are silent regarding the fiber loading of their elastomeric bodies, Aulanko et al make general reference to the use of synthetic fibers. Stork, however, teaches "...rubberized woven fabric material such as cotton, polyester or nylon or combinations thereof..." (Col. 3, Line 58) that forms his "partial tension section" as a "flexible resilient material".

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a matrix of fibers for the enhancement of tensile and torsional strength properties.

Claims 11 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Aulanko et al and White et al, as applied to Claim 1, and in further view of Siefert.

Adifon et al, Aulanko et al and White et al do not address the measurement of tensile cord loading. Siefert, however, teaches an electrical circuit (21, 22, 25, Fig. 1) connected to the tensile cord for measuring the stress-strain of metal cords, for various loading conditions. Conversely, based on the measured strains, the tensile loads can be calculated.

It would have been obvious to one of ordinary skill in the art to modify the inventions Adifon et al with Aulanko et al and White et al, as furthered by the teachings of Siefert, to provide a means to determine the tensile cord load of suspension belts by measuring the stresses of said cords through electrical transducers (P/I), to provide instantaneous feedback for operational oversight and historical data.

Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Aulanko et al and White et al, as applied to Claims 1 and 13, and in further view of Suhling.

Adifon et al, Aulanko et al and White et al do not address the measurement of tensile cord failure. Suhling, however, teaches his tensile cords for the detection of breakage, including his electrical circuit (Fig. 1) for detection of such failure.

It would have been obvious to one of ordinary skill in the art to modify the inventions of Adifon et al with Aulanko et al and White et al, with the teaching of Suhling, to provide a means to monitor the failure of tension members for safety and maintenance.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takami et al (4,773,895), Robar et al (6,633,159), Choquet (4,803,888), Fischer (4,330,287), De Angelis (5,834,942) and De Angelis (6,608,487) are cited for reference of a ribbed belt having rib angles of 20° to 80°, an apparatus for monitoring the electrical resistivity of tension cords in suspension belts, an apparatus for measuring the tensile loading of steel cables through electrical resistivity, and apparatuses by a common inventor for determining the replacement of synthetic cables of elevators using electrical conducting means, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Kruer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F, 09:00 - 18:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Matecki can be reached on 571.272.6951. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217.9197 (toll-free).

SHK

12 Apr. 2006

Kathy Matecki

**KATHY MATECKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600**